Distributed Generation in the Grid of the future

By Russ Neal Manager of Distribution Engineering





The E&TS Vision

 "Engineering, technical and business excellence to achieve perfect safety and reliability at less than today's delivery cost."







SCE's Customer Generation Base has Expanded Since 1998

| | Interconnections as of 12/31/03 | | Projects in Development | |
|--|---------------------------------|-------------|-------------------------|-------------|
| Technology | Number of Projects | Total kW | Number of Projects | Total kW |
| Microturbines | 41 | 6,486 | 15 | 2,547 |
| Gas Turbines | 1 | 1,770 | | |
| Internal Combustion Engines (< 5,000 kW) | 75 | 83,025 | 59 | 51,278 |
| Large Projects (IC-GT ≥ 5,000 kW) | 7 | 99,296 | 4 | 39,691 |
| Fuel Cells | 2 | 10 | 1 | 416 |
| Small Hydro | 1 | 643 | | |
| Combined Technologies (PV/GT) | 3 | 8,555 | | |
| Solar (PV & Wind) (includes NEM) | 1,937 | 12,742 | 196 | 1,930 |
| Total | 2,067 | 212,527 | 275 | 95,862 |





Where DG can make sense

- CHP (Combined Heat and Power)
- "Free" energy
 - Landfills, Process gas
 - Solar, Wind, Small Hydro
- Remote Location
- Peak shaving w/Standby DG
- To defer large distribution up grades
- Emergency power assurance





DG Challenges

 Finding a "win-win" strategy for both the DG user, other customers, and the utility

Integration of DG communication and control into a utility system

Load assurance requirement





SCE & DG - going forward

Formed a DG Team within T&D to:

- Ensure that T&D planning incorporates DG
- Continue leading role in testing and evaluation
- Provide mitigation measures for overloaded distribution equipment





- SCE facilitates the interconnection of customer generation to its grid
- SCE offers a reasonable & expeditious interconnection process
- SCE interconnection rules have been standardized and streamlined under California Rule 21



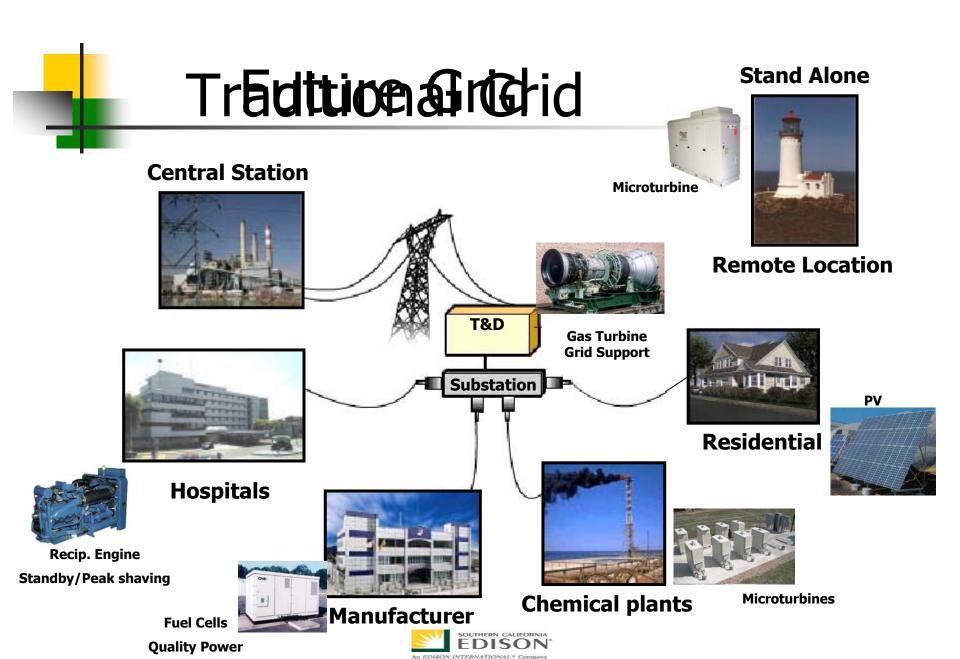
SCE and DG – going forward (Summary)

SCE supports DG when it is:

Economically Sound

Environmentally sound







Future Grid

- More reliable
- Safer
- Improved economy
- Better power quality
- Environmentally responsible





Q&A

